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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,342	12/05/2003	Zhidan Li Tolt	nanogate120303	1341
7590 06/08/2007 ANTHONY B. DIEPENBROCK III DECHERT LLP P.O. BOX 10004 PALO ALTO, CA 94304			EXAMINER BUDD, PAUL A	
			ART UNIT 2815	PAPER NUMBER
			MAIL DATE 06/08/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/707,342	TOLT, ZHIDAN LI	
	Examiner	Art Unit	
	Paul A. Budd	2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-57, 64-68, 70, 71 and 74-86 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40-52, 55, 57, 64-68, 71, 74-81 and 84-86 is/are allowed.
- 6) ☒ Claim(s) 53, 54, 56, 70, 82 and 83 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5 December 2007 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims **40-57, 64-68, 70, 71, and 74-86** are pending in the instant application. The 112(2nd) rejection of claims **51, 52, 55, 56, 64 and 70** for the reasons stated in the Office Action mailed 20 September 2006 are withdrawn.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims **53-54, and 82-83** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims **53, 82** recites the limitation "wherein the embedding material is two layers. Neither the applicant's disclosure nor drawings show original antecedent basis for "wherein the embedding material is two layers". Claims **54, 83** depend on **53 & 82** respectively and also requires two embedded layers. . These claims were first introduced in the applicant's response dated 13 September 2005 as claims **49, and 50** and then subsequently on 1 December 2005 as

Art Unit: 2815

claims **53**, and **54** and also on 8 May 2006 in claims **53,54,82** and **83**. These claims are new matter. In addition, since we do not know what the materials are it appears to be un-enabled.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims **56**, and **70** are rejected under 35 U.S.C. 102 (e) as being anticipated by Lee et al. (US Patent Pub. 2005/0067935).

Regarding claim **56**, Lee teaches an emission electron source comprising:

a cathode electrode [FIG. 1-7, 12, page 3 section 0021] disposed on a substrate, the

cathode electrode [12] for providing a source of electrons;

an emitter layer [FIG. 7, 14] disposed over said cathode electrode [12] and formed from

a composition of an embedding material [section 0021, aluminum oxide] and one or a

plurality of nano-structures [FIG. 7, 20, page 4 section 0030] embedded therein, the

embedding material [14] having a surface above which portions of the nano-structures protrude [See FIG. 7] to emit electrons;

an insulator [FIG. 7, 30, page 2-3 section 0026, "SiO₂"] disposed over the emitter layer [14], the insulator [30] having one or a plurality of apertures [FIG. 2, 16; page 3 sections 0021, 0025], each exposing at least the ends [see FIG. 7] of the nano-structures [20] in the emitter layer [14]; and

a gate electrode [FIG. 7, 32; pages 3-4 sections 0026-0027] disposed over the insulator [30] and having one or a plurality of apertures [16], wherein each aperture exposes a single nano-structure [See FIG. 7] and is concentrically self-aligned [See FIG. 7] with the end of the nano-structure [20], the gate electrode [32] being operative to control the emission of electrons through the apertures [16] from the exposed nano-structures [20]; wherein said insulator [30] functions also as the embedding material [FIG. 7 shows the nano structures embedded in both the emitter layer and the insulator layer. The rejection is based the structure being claimed and not on functional language per "In re Swinehart 169 USPQ 226 (CCPA)"]].

Regarding claim 70, Lee teaches an emission electron source comprising:

a cathode electrode [FIG. 1-7, 12, page 3 section 0021] disposed on a substrate, the cathode electrode [12] for providing a source of electrons;

an emitter layer [FIG. 7, 14] disposed over said cathode electrode [12] and formed from a composition of an embedding material [section 0021, aluminum oxide] and one or a plurality of nano-structures [FIG. 7, 20, page 4 section 0030] embedded therein, the

Art Unit: 2815

embedding material [14] having a surface above which portions of the nano-structures protrude [See FIG. 7] to emit electrons;

an insulator [FIG. 7, 30, page 2-3 section 0026, "SiO₂"] disposed over the emitter layer [14], the insulator [30] having one or a plurality of apertures [FIG. 2, 16; page 3 sections 0021, 0025], each exposing at least the ends [see FIG. 7] of the nano-structures [20] in the emitter layer [14]; and

a gate electrode [FIG. 7, 32; pages 3-4 sections 0026-0027] disposed over the insulator [30] and having one or a plurality of apertures [16], wherein each aperture exposes a single nano-structure [See FIG. 7] and is concentrically self-aligned [See FIG. 7] with the end of the nano-structure [20], the gate electrode [32] being operative to control the emission of electrons through the apertures [16] from the exposed nano-structures [20]; wherein said nano-structures [20] in the emitter layer [14] are truncated to substantially the same length [See FIG.7; page 4 sections 0027-0030], so that each exposed nano-structure [20] in the gate aperture [16] has substantially the same gate-to-emitter distance [See FIG.7, page 4 sections 0027-0030].

Allowable Subject Matter

4. Claims **40-52, 55, 57, 64-68, 71, 74-81, and 84-86** are allowed.

Response to Arguments

5. The Office agrees that the Hsu reference (US 6,448,701) does not anticipate claims **55, 56 and 70**. The Office agrees that the Nakamoto reference (US 6,097,138)

does not anticipate claim **64**.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

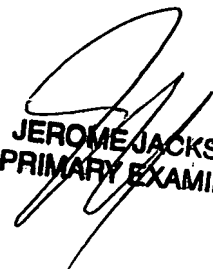
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Budd whose telephone number 571-272-8796. The examiner can normally be reached on Monday to Friday 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

Art Unit: 2815

applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PAB


JEROME JACKSON
PRIMARY EXAMINER